

UNITED STATES COAST GUARD

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COMMANDANT
U.S.COAST GUARD
HEADQUARTERS
WASHINGTON 25, D. C.

8 March, 1950
FILE: MVI (CG-MIN-ASA
LOTHROP a-13)

From: Chief, Merchant Vessel Inspection Division
To: Commandant
Via: Chief, Office of Merchant Marine Safety

Subj: Marine Board of Investigation; Motor Vessel ASA LOTHROP - death of three (3) longshoremen and injury to four (4) longshoremen, on board in number 3 hold on 29 December, 1949 at Tacoma, Washington.

1. Pursuant to the provisions of Title 46 C.F.R. Part 136, the record of the Marine Board convened to investigate subject casualty, together with the Findings of Fact, Conclusions and Recommendations, has been reviewed and is forwarded herewith.

2. The ASA LOTHROP, a motor propelled vessel of 2436 gross tons, built in 1943, owned by the United States under bareboat charter to the Alaska Ship Lines, Inc., was loading cargo at Tacoma, Washington for Alaskan ports. During the afternoon of 28 December, 1949, two highway trailer vans filled with perishable foods and solidified carbon dioxide for refrigeration purposes were loaded into the number 3 hold which hold was then secured for the night. The following morning upon entering the number 3 hold, one longshoreman appeared to suffer an attack in the form of a seizure. Three longshoremen went to his rescue and were similarly attacked. Three longshoremen were asphyxiated by carbon dioxide gas which escaped from the trailer vans and the fourth was revived.

3. As a result of this casualty, the following three persons lost their lives:

William P. Flannery - Longshoreman - 726 So. 48th St., Tacoma, Wash.

Dell J. Thiel - Longshoreman - 3624 East B. St., Tacoma, Wash.

Albert J. Nysen - Longshoreman - 2327 No. 27th St., Tacoma, Wash.

4. The Board made the following Findings of Fact:

(1) On the morning of 29 December, 1949, between approximately 0820 and 0850 hours, three longshoremen employed by the Rothschild-International Stevedoring Company were asphyxiated by a concentration of carbon dioxide gas in #3 hold of the M/V ASA LOTHROP, which was lying at Shaffer Terminal Number 1, Tacoma, Washington. At the time a fourth longshoreman employed by the same company, was removed from the hold in an unconscious condition by the Chief Mate, and was revived at a nearby hospital.

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(2) It appears that during the afternoon of the previous day, 28 December, 1949, the deceased, along with other members of the gang, had loaded two trailer vans into Number 3 hold of the vessel. Each of these vans contained, in addition to perishable food stuffs, a quantity of solidified carbon dioxide of approximately three tons, for the purpose of refrigerating the contents while in transit to the port of destination. Shortly after these vans were loaded, the hatch covers, including tarpaulins, were put in place to protect the cargo from the weather until the following morning when it was intended to complete loading operations in the hold with other cargo of less perishable nature.

(3) On the following morning, which was the 29th of December, 1949 at 0800, two gangs from the same stevedoring company reported on board to complete loading operations in Number 3 and other cargo holds. One of these gangs was the same which began loading operations on the previous day, and included the three men who became asphyxiated. It appears that on the morning of 29 December, Ivan Farrow, who was employed as a foreman by the Rothschild-Stevedoring Company, entered the Number 3 hold first at approximately 0815, as far as the top of the trailer vans already in place, and from a standing position on these vans sensed that a strong concentration of gas existed. Unseen, however, by him or any of the other longshoremen of the gang, one Albert J. Nysen had proceeded into the hold and was descending via the sweat boards, which extended from the deck down on each side to the lower flooring. Meanwhile four other longshoremen joined Mr. Farrow on the top of the vans and at about this time they heard Mr. Nysen, who was already in the hold, crying for help and apparently in distress. Immediately William Flannery, DeA J. Thiel and Mr. Clarence Barnes, who were with Mr. Farrow on top of the vans, proceeded down the sweat boards to give assistance and aid to Mr. Nysen. As each of these longshoremen reached the same level as Mr. Nysen he became overcome by the effects of the gas. The other longshoreman, James Skiffington, proceeded along the top of the vans to the side of the hold under the deck for better observation and to lend assistance, but upon feeling the effects of the gas indicated by physical weakness, he withdrew immediately, making his way to the ladder and reached the deck only after the utmost physical exertion on his part and barely in time to avoid unconsciousness.

(4) At about this time word had reached the Chief Mate, Edward W. Larsen, who was nearly performing his deck duties, that a number of longshoremen were overcome by gas in the cargo hold. The Chief Mate thereupon directed the second and third mates to obtain the oxygen breathing apparatus with which the ship was provided at the time. After donning the breathing apparatus the Chief Mate was lowered into the hold by the crane with a stretcher attached to the sling, and

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proceeded to the distressed men. Meanwhile the oxygen breathing apparatus did not appear to be functioning properly, it becoming necessary to open the bypass valve on the oxygen tank. Upon reaching the hold, however, the Chief Mate proceeded to the distressed men and selected as first to be removed the one who he observed to be struggling as if in pain. It was necessary to drag this unconscious longshoreman a distance of approximately twelve feet from where he was found to a position where he could be placed on the stretcher for removal. This longshoreman appeared to be in convulsions, and fearing that he might fall from the stretcher, the Chief Mate was advised, by those on topside, to ride up on the stretcher with him to prevent such an occurrence. Meanwhile, the Chief Mate continued to experience trouble with the oxygen breathing apparatus. Upon reaching the topside with the unconscious longshoreman the Chief Mate found it necessary to remove the oxygen breathing apparatus as it appeared to be no longer serviceable, whereupon it was discovered that the supply of oxygen had been entirely exhausted. The longshoreman who was removed from the hold in this manner, proved to be Mr. Clarence Barnes who was immediately removed to the hospital where he was revived some time later.

(5) At about this time apparatus from the local fire department had arrived on the scene, having been previously summoned by a police car. The members of the fire department assumed charge and informed the Mate that they would take over from there. The remaining three longshoremen thereupon were removed from the vessel's hold by members of the fire department and immediately dispatched to the hospital where it was found that death had occurred in each case from asphyxiation.

(6) At this time it appears appropriate to digress somewhat to explain the existence on board of the oxygen breathing apparatus and its failure to function efficiently during this emergency. It appears from the testimony that some time during the preceding month of October an oxygen breathing apparatus of the one-hour type made by the Mine Safety Appliance Company, was requisitioned by the Chief Engineer and was supplied on board by the owners. It further appears that when this apparatus was received on board it was placed in the custody of the Third Mate, George C. Christoferson, who assembled the apparatus and tested it out in accordance with instructions accompanying the apparatus. From the testimony it appears further that the apparatus was again tested on a number of occasions by opening the oxygen valve to observe the pressure of the oxygen. It further appears from the testimony that this breathing apparatus was broken out on occasions of fire and boat drills, at which time it was tested by donning the mask and allowing it to function. It appears also that this process for testing and drilling

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with the apparatus occurred on five occasions, estimated to be of about eight minutes' duration. An estimate would show that a 40-minutes' supply of oxygen had been thus used, leaving a 20-minutes' supply remaining. Actually, however, it appears that considerably more oxygen was used, in view of the testimony of the Chief Mate that the apparatus indicated failure during the emergency after not more than five minutes of use. In this connection it must be noted that the oxygen breathing apparatus placed on board the ASA LOTHROP by the owners, was not required by either the certificate of inspection or the applicable general rules and regulations as a part of the vessel's equipment, nor were spare charges carried.

(7) Trailer vans of the same size and character, and containing similar amounts of cargo and solidified carbon dioxide refrigerant had been carried on at least one previous voyage of this vessel, at which time it appears that some of the longshoremen engaged in stowing cargo had experienced severe headaches, presumably as the result of the escaping gas. As a result, electrically driven blowers were supplied to remove the gases from the hold while the men worked. These blowers were carried on the voyage to Valdez, Alaska, the terminal port, and were returned to Tacoma on the return voyage. They were, however, not used during loading operations which occurred on the 28th and 29th of December, which resulted in the casualty under investigation.

(8) The physical effects experienced by a person entering an atmosphere of CO₂ gas, are not such that would warn a person in time to avoid unconsciousness and asphyxiation. From the testimony of the survivors, Clarence Barnes and James Skiffington, one experiences a sudden weakness in the knees, followed almost immediately by blackout and unconsciousness. Mr. Barnes expresses it as the sensation of passing out from a blow with a bat with no further feeling until revival takes place. Mr. Skiffington, who was atop the vans when affected, expressed it as severe weakening, requiring the utmost mental and physical exertion to escape to higher levels. When Mr. Skiffington reached the deck he partially collapsed but did not lose consciousness."

5. The Board made the following Conclusions:

"(1) It is concluded that William Flannery, Del J. Thiel and Albert J. Nysen lost their lives by asphyxiation from carbon dioxide gas in the hold of the M/V ASA LOTHROP, brought about by the two former men attempting to rescue their fellow workman, Albert J. Nysen, who, unobserved, entered the ship's hold while the working foreman, Mr.

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Farrow, was ascertaining whether it was safe to do so. It is further concluded that no blame can be attached to any living person or persons, including the crew of the above-mentioned vessel, nor has there been any violation of Coast Guard rules and regulations respecting the nature, loading or stowage of cargo, or with respect to the integrity or manning of the vessel for transporting such cargo."

6. The Board made the following Recommendations:

"(1) The advantages derived from the use of solidified carbon dioxide, or what is commonly known as dry ice, for refrigerating perishable goods in transit, are well known. In addition to effecting suitable refrigeration, the resultant carbon dioxide gas is said to prevent growths of mold or fungus in shipments of fresh fruits. The transportation of such cargoes by rail or truck services in the open country where the resultant gas can be dissipated over wide areas, appears to involve no hazards to persons handling such shipments. When such cargoes, however, are loaded in the holds of a ship from which the accumulated gases given off by the refrigerant cannot escape, a hazardous condition is created which apparently has not been fully recognized; namely, the danger of persons entering a hold becoming asphyxiated by heavy gas concentrations. Such hazards are not exclusively the result of using solidified CO₂ as a refrigerant for cargo; they could very well be created should a fixed CO₂ fire-fighting system be accidentally released.

(2) It is recommended, therefore, that the general rules and regulations be amended to require all cargo vessels with holds exceeding six feet in depth, measured from the main deck to the tank tops, to carry as part of their equipment an approved flame safety lamp, and at least one oxygen breathing apparatus, either of the standard tank type or of the oxygen generating canister type. It is further recommended that the general rules and regulations be amended to require that it shall be the duty of the master to cause a test to be made in each cargo hold, immediately following the removal of hatch covers, using a flame safety lamp, before any persons whomsoever are permitted to enter the holds for any reason. Means for adequate ventilation should be installed in each hold in which it is found that a deficiency of oxygen exists, or that an accumulation of noxious gases or vapors are present.

(3) It will be noted in this investigation that the purpose of the oxygen breathing apparatus which had been supplied to the ship, was defeated by too frequent testing and its use at fire and boat drills. The result was that when an emergency arose the oxygen breathing apparatus contained less than five minutes' supply of oxygen. It appears obvious, however, that the same situation respecting the failure of the oxygen breathing apparatus could develop on other vessels,

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due to the apparent lack of knowledge among crew members regarding the care and stowage of such equipment. In order to assure, therefore, that oxygen breathing apparatus will be reliable for use during an emergency over the time for which designed, it is recommended that the appropriate rules and regulations be amended to require that fresh replacements of oxygen and carbon dioxide be attached before such equipment is stowed for emergency use. The rules should further set forth suitable measures and procedures for the examination and determination of the integrity of such apparatus at stated intervals, in accordance with the recommendations of the manufacturer of such equipment.

(4) It is also recommended that the findings of facts in this case be publicized in the Merchant Marine Council Proceedings Bulletin, in order that longshoremen and seamen may become better acquainted with the danger encountered when entering cargo holds.

(5) Finally, it is recommended that a letter be addressed by the Commandant to the Chief Mate of the MV ASA LOTHROP, Edward N. Larsen, commending him on his heroic attempt to effect the rescue of the three men asphyxiated in the hold of that vessel on 29 December, 1949. A sample wording of such letter is affixed hereto for approval."

REMARKS

7. The subject casualty was not investigated nor was the report prepared in substantial conformance with 45 C.F.R. Part 156 and Chapter 7 of the Merchant Marine Safety Manual.

8. The conclusion of the Board "that no blame can be attached to any living person or persons, including the crew of the above mentioned vessel, nor has there been any violation of Coast Guard rules and regulations respecting the nature, loading or storage of cargo, or with respect to the integrity or manning of the vessel for transporting such cargo," is not sustained under the provisions of R.S. 4472 as amended.

9. Subsection (6) of R.S. 4472, as amended, provides that it shall be unlawful knowingly to transport, carry, convey, store, stow or use on board any vessel, dangerous articles or substances, except as permitted by the regulations of the Commandant of the Coast Guard with certain exceptions not material here. Subsection (7) (a) of R.S. 4472 as amended, requires all explosives or other dangerous articles or substances to be defined, described, named and classified by regulations.

10. Carbon dioxide in any of its forms is a dangerous substance and its presence on board vessels subject to R.S. 4472 as amended, is prohibited by such statute unless specifically permitted by regulations of the Commandant. Under the regulations established pursuant to R.S. 4472 as amended, liquefied carbon

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dioxide for fire extinguishing and refrigerating purposes is permitted. Liquefied carbon dioxide is also permitted for shipment when contained in syphon bulbs and bottle charges. Solidified carbon dioxide is neither dealt with nor defined, described, named or classified as a dangerous article or substance in any regulation established pursuant to R.S. 4472 as amended. The lack of a definition by regulation classifying solidified carbon dioxide as a dangerous article or substance, prevents the invocation of the penalty subsections (14) or (15) of R.S. 4472 as amended since no person can be charged with "knowingly violating" any provision of R.S. 4472 as amended or regulation thereunder in transporting, carrying, conveying, storing, stowing or using any dangerous article or substance unless such article or substance is first defined, described, named, or classified as a dangerous article or substance by the regulations.

11. The use of solidified carbon dioxide as a refrigerant for certain commodities has become recognized practice in highway vehicles. Accordingly, the matter of permitting the use of solidified carbon dioxide as a refrigerant in highway vehicles loaded on certain vessels together with the Recommendations of the Board, will be referred to the Merchant Marine Council for consideration and establishment of appropriate regulations upon approval of this report.

12. The Recommendation of the Board that Edward H. Larsen, Chief Mate of the ASA LOTHROP be commended for his heroic attempt to effect the rescue of the men asphyxiated in the hold of that vessel on 29 December, 1949, is approved and a letter of commendation is appended herewith.

13. Subject to the foregoing remarks, it is recommended that the report of the Marine Board of Investigation be approved.

/s/ Edw. C. Cleave

EDW. C. CLEAVE

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From: Chief, Office of Merchant Marine Safety
To: Commandant

Forwarded, recommending approval.

/s/ H. C. SHEPHEARD
H. C. SHEPHEARD

18 APR. 1950

APPROVED.

/s/ Merlin O'Neill
MERLIN O'NEILL
Vice Admiral, U. S. Coast Guard
Commandant